

# THE SAFETY OF PRIVATE E-SCOOTERS IN THE UK

**INTERIM REPORT**

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PACTS

PARLIAMENTARY  
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# Executive Summary

Legislation to permit the use of private e-scooters on public roads in the UK may come forward in 2022. Understanding their safety is essential before regulations are drawn up. Evaluation of the government trials of rental e-scooters alone will not provide this information. PACTS is gathering evidence on the safety of private e-scooter use and obtaining accounts of casualties.

Since 2020, large numbers of electric scooters (e-scooters) have appeared in the UK. While some people have hailed them as a solution to low-carbon urban mobility, others have questioned their benefits and safety.

e-scooters have been in widespread use in cities in North America, Europe and elsewhere for several years. In these locations e-scooters are predominantly provided through rental schemes. In the UK, uniquely perhaps, the growth has been overwhelmingly in private ownership and use.

Under UK law, e-scooters are motor vehicles and are illegal to use on roads or in public places without the appropriate registration, insurance, etc. In 2020, at short notice, the Government authorised trial rental schemes of e-scooters in England. Around 50 local authorities have now introduced regulated schemes, with private companies providing around 20,000 e-scooters. These schemes are being monitored by the Department for Transport. Publication of their interim evaluation is due before the end of 2021.

In parallel, much larger numbers of e-scooters have been bought (quite legally) by the public. The Bicycle Association estimates that in 2020 this amounted to some 360,000 and sales have continued in 2021. Hundreds of thousands of them are evidently being used – illegally – on roads and in public places across the UK. Safety concerns, notably for the riders,



pedestrians and visually impaired people have arisen. The police are taking enforcement action where resources allow.

The Transport Select Committee recommended legalising private use of e-scooters and the Department for Transport seems inclined to do so, possibly in 2022. In that event, detailed regulations will be required. PACTS believes that these should be based on good evidence regarding safety, which is currently lacking. While the trials should produce information on safety of rental schemes, much of this will not be applicable to private use. In addition, e-scooter casualties are under-recorded in official statistics which are published 9-21 months in arrears.

With the support of the Road Safety Trust, PACTS has established this project to gather qualitative and quantitative information on the safety of private e-scooter use. Project partners include the police, NHS trauma specialists, insurance companies, solicitors, the bicycle industry and others. Through 2021 PACTS has independently obtained accounts of casualties from the internet and social media. These are updated and published monthly on the PACTS website. These data are incomplete but, in the absence of anything else, they are probably the best available.

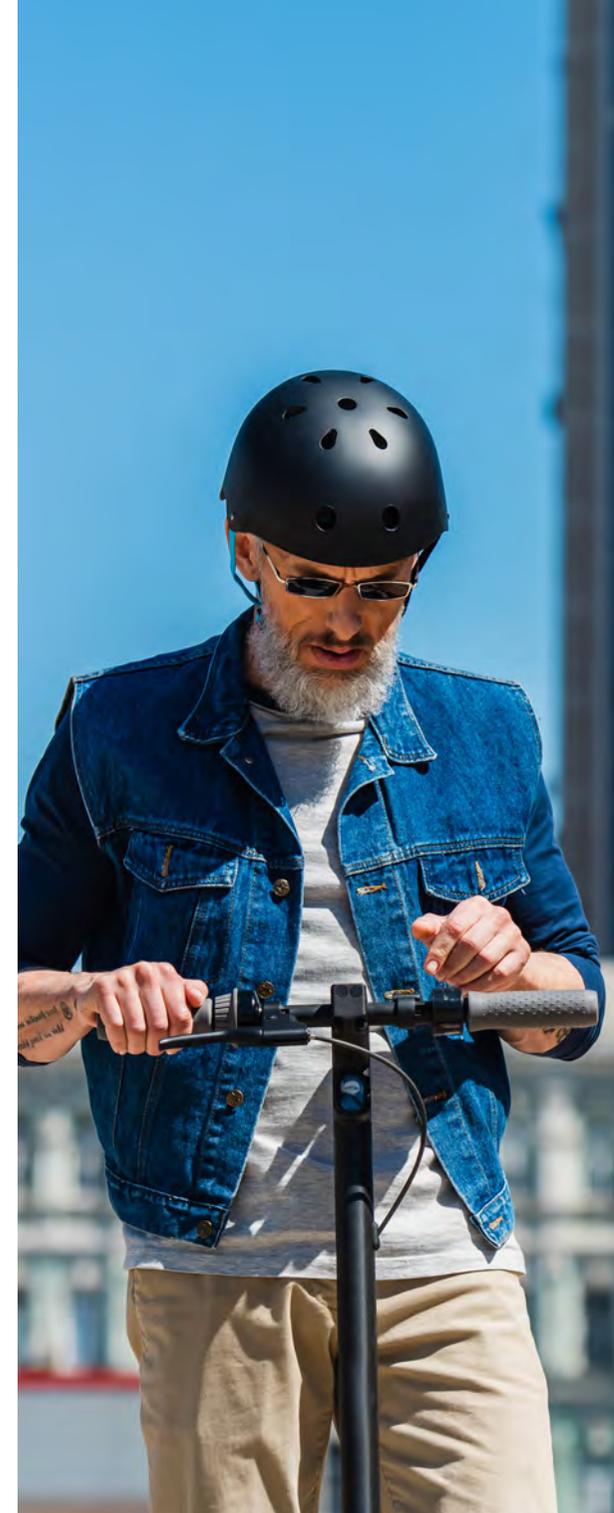
In the first ten months of 2021, there have been nine deaths and other casualties involving both riders and other road users. Head injuries and rider falls, as well as collisions with a motor vehicle, are a concern. As the project progresses and more data sources are established, PACTS anticipates that the recording of non-fatal casualties in its 2021 database will increase considerably.

This interim report is intended to highlight the information and issues revealed to date. It does not include conclusions or recommendations. They will follow in the final report in early 2022, when more information has been obtained. It will be for the government to decide if the benefits of e-scooters outweigh the disadvantages. PACTS contribution is in relation to safety.



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1

Introduction

The purpose of this report is to present evidence on the safety of private e-scooter use in the UK. In excess of 360,000 e-scooters were purchased privately in 2020. It is evident that many are being used illegally on roads and in other public places.<sup>1</sup>

Meanwhile, e-scooter rental trials are underway, as part of a government initiative. The Transport Select Committee recommended that the government legalise the private use of e-scooters when the rental trials conclude. The Department for Transport has made clear its preference to do so, once it has evaluated the trials. The trials are expected to conclude at the end of November 2022. Legislation seems likely to come forward in Spring 2022.

Whilst the trials are being extensively monitored, there is little or no assessment of private e-scooter use. There are significant differences between the rental schemes and private use. PACTS does not believe that the learning from the trials will provide an adequate basis for legalisation of private use. PACTS is therefore pleased to undertake this project into the safety aspects of private use, with assistance from our project partners, and with support from the Road Safety Trust.

As the legislative timetable is uncertain and drafting may begin soon, PACTS is publishing casualty information on a monthly basis. In the first ten months of 2021 there have been nine recorded deaths involving an e-scooter and, from limited data sources, at least 300 casualties identified.

This interim report precedes a more detailed study which PACTS will publish in 2022 once more data and information have been collected. The aim is to provide evidence to inform decisions about the regulations for construction and use that will be required if legislation for private e-scooters proceeds. There will be many aspects for the Government to consider when weighing up decisions on legalisation. This project focuses on the safety.

<sup>1</sup> As advised by the Bicycle Association

“ e-scooters appeared in cities in mainland Europe ahead of the UK. Many national and city authorities are still trying to find the right regulations to manage them safely. Starting with a clean sheet gives the UK an opportunity to learn from others and craft regulations to avoid problems that can arise.

**Dudley Curtis**  
The European Transport Safety Council





# 2

## e-scooter use in the UK: The setting

Although invented, in their current form, in the late 1990s and having been in use across Europe and the US for a number of years, it was not until summer 2020 that e-scooters became extensively used in the UK. Here all e-scooters are deemed motor vehicles and all motor vehicles – from mopeds through to HGVs – need type approval. e-scooters do not conform to any of the type approval categories; as such, therefore, they are illegal. However the DfT used powers to allow regulated e-scooter rental schemes, by setting limitations on the rider and device. Commencing in July 2020, these schemes present a legal means by which hired devices can be ridden. Simultaneously, the prevalence of private e-scooters has grown with ownership, in mid-2021, estimated at 500,000.<sup>2</sup>

## Rental e-scooters

The launch of the Government's regulated e-scooter trial rental schemes was accelerated by the Covid-19 pandemic. The Government said that e-scooters would be an alternative to public transport and offer a 'greener' mode of transport to the private car. Schemes in over 50 areas, with around 20,000 devices are now in circulation.<sup>3</sup> The purpose of the trials includes improving the "speed to market of new products and services that could deliver significant benefits" as well as assessing "the safety benefits of new transport modes".<sup>4</sup>

Through the trials, registered individuals with a driving licence can hire an insured e-scooter, with a capped speed of 15.5mph or less, which can be ridden on roads and cycle lanes (it is illegal to ride them on pavements). The devices must meet a number of different requirements including conformity with technical standards, licensing, and registration. Riders are expected to meet standards of use and are recommended to wear appropriate safety equipment.<sup>5</sup> From the operator-owned and maintained e-scooters data covering demographics, location and extent of use, rider experience, including collisions, and also helmet wearing is collected. Riders have an obligation to report any injuries they sustain to the operator, although this cannot be enforced.

<sup>2</sup> As advised by the Bicycle Association

<sup>3</sup> As advised by the Department for Transport

<sup>4</sup> [CBP-9322.pdf \(parliament.uk\)](#), accessed 30 September 2021

<sup>5</sup> [E-scooter trials: guidance for local areas and rental operators - GOV.UK \(www.gov.uk\)](#)



## Private e-scooters

Private e-scooters are unlike rental e-scooters in both their construction and use. They are legal to buy, with minimal certification to demonstrate their safe construction. They can be used only (with permission) on private land where speeds are un-restricted. 15-20mph is typical although some devices can exceed 50mph. There are no standards to be met for their safety or performance and a wide range of models is available.

It is illegal to ride a private e-scooter in public places including roads, pavements, parks or cycleways. However, they are increasingly being used in these spaces. Private devices are not fitted with the speed limiters, geofencing control of no-go or go-slow areas or onboard diagnostics afforded by the rental e-scooters. There is no traceability of users and limited ability for enforcement authorities to penalise riders for irresponsible behaviour. The extent of use far exceeds that of the rental schemes (which are limited to England) with devices sited across the UK. In two nationwide YouGov surveys conducted by Guide Dogs UK the majority of the people interviewed reported seeing e-scooters in locations without an e-scooter trial.<sup>6</sup>

<sup>6</sup> As advised by Guide Dogs UK



“ The Bicycle Association has put forward specific recommendations for the construction of private e-scooters. These are often assumed to be “just like electrically assisted pedal cycles”. They are not. e-scooters have very small wheels, minimal ground clearance, throttle controls, a different braking system, extreme manoeuvrability, faster acceleration and average speed. For maximum safety, these factors must be reflected in any new regulations.

**Phillip Darnton**  
The Bicycle Association

**Figure 1:** Rental and private e-scooters compared

	Rental e-scooter	Private e-scooter
<b>Rules &amp; Regulations</b>	Subject to motor vehicle regulations, as modified to permit experimental trials for rental e-scooters only	Subject to motor vehicle regulations (but an e-scooter cannot meet the requirements for legal use of a motor vehicle on the public highway)
	Allowed on public roads	Illegal to use in any public space including roads, cycle lanes, pavements, pedestrianised areas, parks and off-road paths such as bridleways
	May be ridden on cycle lanes	
	Must not be ridden on pavements	
	Exempt from normal type approval, but the trial technical requirements are effectively a form of type approval	Excluded from the scope of whole vehicle type approval and cannot obtain UK single vehicle type approval either
	Exempt from vehicle registration	Vehicle registration is necessary for legal use but cannot be obtained without type approval
	Exempt from vehicle excise duty	Vehicle excise duty cannot be paid for a vehicle which cannot be registered
	Must be insured	Un-insurable without type approval and vehicle registration
	May be geofenced to trial area	No technical controls on place of use
	Owned by licensed operator, hired by rider meeting certain requirements	Limited rider training available
<b>Rider Requirements</b>	Rider training recommended	Legal to sell to anyone
	Rider must have a valid driving licence with category Q entitlement	No rider requirements stipulated
	Helmet wearing recommended	
	Rider must report injuries incurred to the operator	
	Responsible riding encouraged (irresponsible use can result in penalties including a ban from use of the rental scheme)	If caught, penalties for illegal use include a Fixed Penalty Notice for no insurance, with a £300 fine and six penalty points as well as seizure of the e-scooter
<b>Features</b>	Capped speed at 15.5mph, or less <sup>7</sup>	Some capable of speeds in excess of 50mph
	Robust construction to withstand wear and tear	Should meet General Product Safety, Machinery and EMC product regulations for CE marking (compliance can be self-certified by the manufacturer)
	Dual braking	No standard, some have single foot-operated or electric brakes
	Must pass rider stability testing	No performance testing required
	Lighting, some have indicators	No requirement for lighting
	Audible warning, some make a continuous noise	No requirement for warning noise to be made
	May include geofencing which controls speed in no-go & go-slow areas	No technical controls on place of use
		No maintenance testing requirements
<b>Monitoring</b>	May have on-board diagnostics	
	Riders can report defects	
	Rider age recorded at a minimum	No records held at point of purchase,
	Distance and route of each journey recorded	Current traffic-survey devices struggle to detect e-scooters to monitor extent of use
	Helmet wearing noted through app	

<sup>7</sup> Local authorities may set the speed limit at or below 15.5mph

## Future legislation

With the rapid uptake of private e-scooters, concerns about safety, including extensive use of the devices on pavements, and additional loads being placed on enforcement agencies, there are calls for legislation. Although no timetable has been announced, legislation for private e-scooter use could be introduced in a Parliamentary Bill in early 2022.

The legislation would require regulations for the construction and use of private e-scooters. Although the government has extended the rental-scheme assessment period to at least March 2022, and possibly the end of November 2022, their evaluation is of rented devices alone. PACTS' aim is to compile information and recommendations so that safety of private e-scooters can be adequately addressed when the regulations are drawn up.

“ We have been testing e-micro-mobility for five years and training people to use e-scooters for a year. With training, e-scooters can be easy to use and control. There must be a cultural shift to popularise safe and responsible use.

**Jerome Sewell**  
RollTech



3

e-scooters – how should safety be assessed?



There are a number of ways in which the safety of a mode of transport might be assessed, including:

- The number and severity of casualties (users and other road users)
- The casualty rate for the user (typically in relation to distance travelled)
- The casualty rate for the other road users in such collisions (typically in relation to distance travelled)

For a new mode, where decisions on legalisation are required, it is also relevant to consider the safety of the mode the user would have otherwise employed. International studies have consistently shown that e-scooter trips predominantly replace walking trips while many are newly generated leisure trips. A minority come from car, taxi, public transport and cycle.

One yardstick of e-scooter safety used quite widely is to compare them with bicycles. This is useful but needs to be undertaken with care for the details. Another has been to compare them with the overall dangers imposed by cars. In so far as they replace car trips, that may be reasonable, but it is inadequate where walking or public transport trips are replaced.

As e-scooters are a relatively recent addition to UK roads, the data on casualties is changing, though still very limited. Data on private usage is almost non-existent. e-scooters do not feature in the current National Travel Survey and will not do so for several years. This presents policy makers with difficulties.

PACTS recognises that this data paucity exists and will continue for some time. In this project PACTS therefore attempts to elucidate:

- The number of casualties in 2021
- Information on the serious cases presenting in a sample of hospital trauma units
- Information on the nature of e-scooter collisions (single vehicle, with other vehicles , etc.)
- Information on the nature of e-scooter casualties (riders, other road users, etc.)

All modes of transport involve some level of risk. It will be for the government to assess whether the level of risk for e-scooters is acceptable and, if so, how it should be managed. Our aim here is to provide information to aid this analysis.

“ There is a significant difference between privately owned e-scooters and those used in rental schemes with many of the safety features impossible to replicate for a private market, this means any future legislation must provide officers with the required tools to seize devices that do not comply with any standards or requirements laid out in the law and stop any devices that fail to stop for police.

**Sergeant Steve Wilson**  
The London Metropolitan Police

“ Nearly 70% of the e-scooter riders and other road users have told us that safety is a concern to them. The quality of the road infrastructure is important for riders and pedestrians are worried about the use of e-scooters on pavements.

**Dr Graeme Sherriff**  
University of Salford

# 4

## Latest e-scooter casualty data



The recording of incidents involving rental e-scooters is one of the terms of contract for the trial schemes. Riders of rental e-scooters who are injured in a collision or fall should report the incident to their operator's dedicated number. However, there is no such onus on people involved in incidents involving private devices. Indeed, if they do so, they may be fined for riding illegally. For a number of reasons, e-scooter casualties are under reported.

There is currently no category for the police to indicate e-scooter incidents when reporting road collisions involving casualties. Hospitals have no pre-agreed method for collating details and, as the devices are uninsurable, claims often do not register as being related to an e-scooter when applications are made. However, knowing the number of casualties and the nature of injuries is important for gaining an understanding of the safety requirements for e-scooter design and use.

STATS19, the method for recording the circumstances of personal injury from road traffic incidents as reported to the police, is due to include a category entitled 'powered personal transporter device' in 2022. However, it will take until 2024 for changes on all IT systems to take effect. When it is implemented, pedal cycles, electric motorcycles and mobility scooters will each have their own categories, but all other new electric powered technology (for example e-skateboards and mono-wheels) will fall under the 'powered personal transporter device' category. There will be a free text box to be filled in detailing which type of personal transporter is involved.

## Published statistics

The first national data on casualties involving e-scooter collisions (rental and private) was published in September 2021 by the Department for Transport.<sup>8</sup> This provides data for 2020 and was prepared where free text data against a STATS 19 reportable accident led to the identification of involvement of an e-scooter. This method of identification is less robust than if a designated vehicle type were available.

<sup>8</sup> [Reported road casualties Great Britain: e-Scooter factsheet 2020 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/e-scooter-factsheet-2020) accessed 30 Sept 2021

“ The public and local authorities remain confused over the legal position and their duties, with the lack of regulation and governance in respect of private e-scooters (including the civil and criminal implications). Private e-scooters breach a number of road traffic regulations and are inevitably being used without the protection of a motor policy. Experience tells us, it is often the uninsured drivers who are more likely to drive recklessly and as a result the safety for all road users, including the most vulnerable, is a real concern. With casualty numbers increasing, including catastrophic injuries, the nature and size of the claims which could be made is worrying, as is the knock on effect for those seeking redress and the human and financial impact this will have on the wider public.

**Jonathan Hodgkinson**  
Weightmans LLP

With adjustments made to account for police injury-based reporting 484 casualties were recorded in incidents involving e-scooters in 2020. Of these, 384 were the e-scooter users. The factsheet notes that 'the Metropolitan police reported 60% of Great Britain accidents involving e-scooters, this compares to 21% of all accidents reported by the Metropolitan police'.<sup>9</sup>

It is suspected that e-scooter casualties are under reported more than other types of road casualty. For example, during 2020 at Kings College hospital, 196 patients presented to the emergency department with injuries incurred in an incident relating to an e-scooter. This compares with the DfT figure of 484 for the same period for the whole of Great Britain. The majority of casualties were riders involved in single-vehicle collisions, i.e. falls.<sup>10</sup>

## Data collection

Because of the lack of e-scooter casualty data, PACTS proposed this project. Running throughout 2021, collision data relating to e-scooters, private or rental, has been collected and made publicly available through the PACTS web page.<sup>11</sup> This data is gathered from media sources accessible online, supplemented by data from insurance firms, the police, a major trauma unit and other organisations which have shared it with PACTS. Where possible, the data has been tabulated to identify the incident by geographic region, type of collision, casualty age and gender, severity of injury, and the type of e-scooter, as well as a record of the source for the data.

PACTS acknowledges that the data is incomplete – but believes it is the best available. The media provide near real-time data, but are only likely to report incidents which are exceptional in their rarity or severity and, as the numbers of cases increase, there is a likelihood that reports will become less frequent. Insurance claims are made only when one, or both, parties deem it worthwhile and then there is a lag between incidents occurring and insurance claims being made, from as little as two weeks to 300 days.<sup>12</sup>

<sup>9</sup> [Reported road casualties Great Britain: e-Scooter factsheet 2020 - GOV.UK \(www.gov.uk\)](#) accessed 30.09.21

<sup>10</sup> As advised by Raju Ahluwalia, Consultant Orthopaedic Surgeon, King's College Hospital

<sup>11</sup> Assessing the safety of private e-scooter use in the UK - PACTS research - PACTS

<sup>12</sup> As advised by the MIB

“ Limited evidence gathered by colleagues working in hospitals suggests that e-scooter riders can suffer more significant head injuries than other vulnerable road users if they are involved in accidents.

We want the government to require users of e-scooters to wear a helmet and ensure helmet usage is recorded for e-scooter riders in accident statistics.

**Peter McCabe**  
Chief Executive, Headway



**At this point (October 2021) the data sources are still being developed. PACTS has been working with a number of partners and anticipates receiving substantially more records for 2021, particularly from the police, once systems mature.**

### Media reports

Through searches of media reports, PACTS has recorded over 100 e-scooter casualties in the UK during the first ten months of 2021. 20% were riders involved in single vehicle incidents having lost control of the device therefore falling or striking an object. 10% were other vulnerable road users – mainly pedestrians. Where details were available, one third of all riders suffered serious injuries and 10% suffered head injuries. Nine deaths were recorded in the media over this ten-month period.

### Police records

As noted above, there is no designated vehicle type for e-scooters within STATS 19 recording. Instead, where police forces can make searches of their free text data, an indication of the number of e-scooter incidents is available. Three police forces have shared their 2021 data with PACTS so far. This includes 139 casualties, including over 10% of those involving other vulnerable road users. Nearly 60% of all casualties suffered slight injuries and no records of the types of injuries have been recorded.<sup>14</sup>

### Insurance claims

One insurance firm has provided data listing 93 cases in the first eight months of 2021.<sup>15</sup> Of these 15% are third party claims, suggesting the remaining 85% were single vehicle incidents. Again, no records of the types of injuries have been recorded. The Motor Insurers' Bureau (MIB) has recorded 35 claims.<sup>16</sup> There is typically an eight-month lag before cases reach the MIB.

<sup>13</sup> These may change as more data is recorded

<sup>14</sup> Surrey and Sussex, Northamptonshire, MPS

<sup>15</sup> Admiral

<sup>16</sup> As advised by the MIB

**Figure 2:** Characteristics of e-scooter casualties involved in e-scooter collision<sup>13</sup>



5

A view from the  
NHS frontline



e-scooter riders, like pedestrians, cyclists and motorcyclists are vulnerable road users without protection from a vehicle body. They are vulnerable to collisions with other vehicles and to falls.

Almost one third of the rider casualties recorded by PACTS have been injured in single vehicle incidents. Preliminary findings from this project suggest that the nature and severity of these injuries may be different from those incurred by pedal cyclists. This may be due to the way in which riders fall. Other vulnerable road users are also being injured in collisions with e-scooters.

NHS emergency departments, major trauma centres and surgical teams are treating increasing numbers of casualties with head injuries and limb fractures common.

### Experience of an orthopaedic surgery team

Since October 2020, an audit has been underway at the Liverpool University Hospitals NHS Foundation Trust of e-scooter casualties.<sup>17</sup> To the end of July 2021, 92 people had presented to the Royal Liverpool and Aintree Hospital Emergency Departments and the Garston Urgent Care Centre and were referred to the orthopaedic team. Only one e-scooter rider had been hit by another vehicle. The rest were involved in single vehicle incidents having lost control of the device and then falling from it or colliding with a stationary object.

Liverpool hosts Voi as their e-scooter operator and, of the people who declared which type of e-scooter they were riding, two thirds were using rental scheme devices. As the use of private e-scooters is illegal the fear of prosecution may have deterred riders from declaring the device they used.

Of the 92 patients in the Liverpool cohort that sustained upper or lower limb fractures, 13 required surgery. Due to the nature of the audit, head injuries and casualties discharged home from the Emergency Departments with more minor injuries have not been recorded.

<sup>17</sup> As advised by David Bodansky at the Liverpool University Hospitals NHS Foundation Trust

“ Across Emergency Departments in Bristol over 40% of patients who are treated after e-scooter accidents have fractures, a number also suffer life changing head injuries. The average cost of treatment to the NHS for these injuries is nearly £1000 per patient.

**Edd Carlton**  
North Bristol Trust and TERN

“ In our Major Trauma Centre alone, we admit at least one e-scooter rider a month with severe injury: mostly serious head and limb injuries. Improving e-scooter safety is a priority to reduce the number and severity of injuries requiring hospital admission.

**Caroline Leech**  
University Hospitals Coventry & Warwickshire NHS Trust

## Experience from an emergency department

In response to a rapid increase in incidences of e-scooter casualties, a service evaluation was conducted over a four-week period in May and June 2021 across Bristol.<sup>18</sup> In that period 90 patients presented to all three Emergency Departments in the city with e-scooter related incidents. Of these 96% had been riding an e-scooter with 80% of those who declared how they were travelling riding hired devices. As in other studies, while the use of private e-scooters is illegal the fear of prosecution may deter riders from being honest about the device they use.

The majority (71%) fell from their e-scooter, as opposed to being involved in a collision with another vehicle. Nearly 20% suffered head injuries with three patients sustaining severe traumatic brain injury, intracranial haemorrhage or a skull fracture. Only 7% of injured riders were helmeted. Over 80% suffered limbs injuries and over 40% suffered a fracture.

## Experience of a London based neurosurgeon

Patients suffering serious head injuries are treated at the Major Trauma Centre at Royal London Hospital. Between January and August 2021, the patients presenting included over 70 road traffic casualties. Of these, eight were e-scooter riders, 11 motorcyclists and 17 pedal cyclists.<sup>19</sup> Each e-scooter casualty was brought in by ambulance and two stayed in the Intensive Care Unit for over a week, both following urgent neurosurgery.

## Experience from a major trauma centre

When a patient is recorded on the Trauma Audit and Research Network (TARN) database it means they have sustained injuries resulting in hospital admission of over three days, critical care admission, death and/or a transfer to a tertiary/specialist centre. PACTS is aware that TARN data relating to e-scooter incidents has been collected since November 2020.

<sup>18</sup> As advised by Professor Edd Carlton at the North Bristol NHS Trust

<sup>19</sup> As advised by Chris Uff and Molly Hilling at Royal London Hospital

“ Our day case trauma surgical lists are being impacted with an increasing volume of patients needing surgery to treat complicated fractures following e-scooter collisions. The increasing costs, and their rate of increase, are a concern.

**Raju Ahluwalia**

Consultant Orthopaedic Surgeon, King's College Hospital



At the University Hospitals Coventry and Warwickshire NHS Trust eight e-scooter patients were registered on the TARN database having been admitted to the Major Trauma Centre in the first eight months of 2021.<sup>20</sup> The majority of these e-scooter riders were male and 75% had fallen from their devices. All suffered serious injuries, including fractures to their limbs and, for half of them, fractures to their skulls.

### Further casualty data

The Royal College of Emergency Medicine Trainee Emergency Research Network (TERN) is currently running a two-week research project in around 20 UK hospital emergency departments. This prospective study will provide a broader picture of the extent and severity of casualties' injuries across a wide range of settings.

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<sup>20</sup> As advised by Caroline Leech, lead for Major Trauma across the West Midlands



# 6 Conclusions



e-scooters present a new means of transport. They are evidently popular – selling in large numbers despite being illegal to use. As concerns over climate change and air quality increase, some advocate them as a useful alternative to the private car. However, riders, of both private and rental e-scooters, are vulnerable road users. There are also concerns over the risks to pedestrians from irresponsible use.

PACTS is clear that rental scooters and their use are different in a number of significant respects from private scooters and private use. This will remain so. It will not be feasible to impose the sophisticated safety devices and management systems, employed in the better rental schemes, on private e-scooters and users.

Despite limited means for recording casualties, the evidence from collision reports that PACTS has collated shows that casualty numbers are growing and that the severity of some casualties is high. In the first ten months of 2021 there have been nine deaths involving an e-scooter and over 300 casualties identified. Hospital emergency departments and major trauma centres are treating seriously injured patients, many with head injuries.

With the assistance from project partners, PACTS will continue to collect information, attempting to put it into context, in order to increase the body of evidence available regarding the safety of private e-scooters in relation to the following:

- vehicle design
- speed
- e-scooter user behaviour, including training
- roads and infrastructure

From this research PACTS aims to compile recommendations for the safe use and construction of private e-scooters to inform any future regulations.

It is not for PACTS to decide whether private e-scooters should be legalised. That decision is for the government and will take into account a wide range of factors. PACTS is seeking to ensure that safety matters are adequately understood and considered as part of that process.

“ Safe use and enjoyment of our roads is an essential human right and it is critical that we have robust evidence that examines new and emerging modes of transport like e-scooters.

Having spent time reviewing the academic literature to date on e-scooters it is safe to say that there isn't a clear picture in terms of safety, user demographics, environmental friendliness, motilities and potential modal shifts. The PACTS study addresses some of these vitally important questions and in particular provides the first important step in understanding the safety, risk and regulation of private e-scooter use alongside the rental market.

**Adam Snow**  
Liverpool John Moores University

# 7

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